

# Community Solar Project Interconnection Community Solar Project Tier 2 Review

Completed for ("Applicant") OCS018

Proposed Interconnection On PacifiCorp's Existing 12.47 kV Circuit 5W7 out of Weston substation Map String 01104035.0 fp #227413

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## **1.0 DESCRIPTION OF THE GENERATING FACILITY**

("Applicant") proposed interconnecting 0.567 MW of new generation to PacifiCorp's ("Public Utility") circuit 5W7 out of Weston substation located in Umatilla County, Oregon. The generation was downsized from 0.63 MW at request by Applicant. The project ("Project") will consist of three (3) Delta M125 HV inverters at 113 kW and two (2) Delta M125HV inverters at 114 kW for a total requested output of 0.567 MW. The requested commercial operation date is December 31, 2020.

The Public Utility has assigned the Project "OCS018."

## 2.0 APPROVAL CRITERIA FOR TIER 2 INTERCONNECTION REVIEW

Pursuant to Section H of the Public Utility's CSP Interconnection Procedures, a Public Utility must use the Tier 2 interconnection review procedures for an application to interconnect a small generator facility that meets the following requirements:

- (a) The Community Solar Project must have a nameplate capacity of two (2) megawatts or less;
- (b) The Community Solar Project must be interconnected to either a radial distribution circuit or a spot network distribution circuit limited to serving one customer;
- (c) The Community Solar Project must use interconnection equipment that is either lab-tested equipment or field –tested equipment. For equipment to gain status as field-tested equipment, the applicant must provide all the documentation from the prior Tier 4 study, review, and approval, including any interconnection studies and the certificate of completion.

#### **3.0 PROPOSED POINT OF INTERCONNECTION**

The Applicant's proposed Community Solar Project will be interconnected to the Public Utility's distribution circuit 5W7 out of Weston substation. The Point of Interconnection will be located near coordinates 45°48'36.39"N, 118°25'2.98"W in Umatilla County, Oregon. Figure 1 below is a one-line diagram that illustrates the interconnection of the proposed generating facility to the Public Utility's system.





Figure 1: System One Line Diagram



## **3.1** Review Assumptions

- All active higher-priority requests for transmission service and/or generator interconnection service (including requests in the traditional interconnection queue and other requests in the Community Solar queue) in the local area of the requested POI will be considered in this study and are listed in Appendix 1. If any of these requests are withdrawn, the Public Utility reserves the right to restudy this request, as the results and conclusions contained within this study could significantly change.
- The Applicant's request for interconnection service in and of itself does not convey transmission service.
- This review assumes the Project will be integrated into Public Utility's system at the agreed upon and/or proposed Point of Interconnection.
- The Applicant will construct and own any facilities required between the point of interconnection and the Project.
- Generator tripping may be required for certain outages.
- All facilities will meet or exceed the minimum WECC, NERC, and Public Utility performance and design standards.
- The generator is expected to operate during daylight hours, 7 days a week, 365 days a year. The primary meter (point of interconnection) power factor range studied was 0.97-0.98 lagging prior to the proposed generation facility being installed.
- This review is based on information available at the time of the review. It is the Applicant's responsibility to check the Public Utility's web site regularly for transmission system updates (https://www.oasis.oati.com/ppw)

## 4.0 TIER 2 COMMUNITY SOLAR PROJECT RESULTS

## 4.1 Screen 1

For interconnection of a Community Solar Project to a radial distribution circuit, the aggregated nameplate capacity on the circuit must not exceed 15 percent of the line section annual peak load as most recently measured at the substation or calculated for the line section.

## **Result: Fail**

No existing generation on feeder

The 5W7 peak load is measured at 1.95 MW. The applicant's generation is 0.567 MW, which equals 29%.

## 4.2 Screen 2

For interconnection of a Community Solar Project to the load side of spot network protectors, the aggregated nameplate capacity on the load side of the spot network protectors must not exceed the lesser of five percent of a spot network's maximum load or 50 kilowatts.

## **Result: Pass**



## 4.3 Screen 3

The aggregated nameplate capacity must not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the primary voltage distribution line nearest the point of interconnection.

## **Result: Fail**

For a single line to ground fault on the 12.5 kV line at the point of interconnection the generating facility will contribute 27% of the fault current.

## 4.4 Screen 4

The aggregated nameplate capacity on the distribution circuit must not cause any distribution protective devices and equipment (including substation breakers, fuse cutouts, and line reclosers) or other public utility equipment on the transmission or distribution system to be exposed to fault currents exceeding 90 percent of the short circuit interrupting capability. The Community Solar Project's Point of Interconnection must not be located on a circuit that already exceeds 90 percent of the short circuit interrupting capability.

## **Result: Pass**

With the addition of the generation facility the maximum fault current on the utility's system will not be in excess of 90 % of the short circuit interrupting capability of the installed equipment.

## 4.5 Screen 5

The aggregated nameplate capacity on the distribution side of a substation transformer feeding the circuit where the small generator facility proposes to interconnect must not exceed 10 megawatts in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity (for example, three or four distribution busses from the point of interconnection).

## **Result: Pass**

## 4.6 Screen 6

If the Community Solar Project interconnection is to a primary line on the distribution system, then the interconnection must meet the following criteria:

- (A) If the Community Solar Project is three-phase or single-phase and will be connected to a three-phase, three-wire primary line, then the Community Solar Project must be connected phase-to-phase.
- (B) If the Community Solar Project is three-phase or single-phase and will be connected to a three-phase, four-wire primary line, then the Community Solar Project must be connected line-to-neutral and effectively grounded.

## **Result: Pass**

The Public Utility's distribution line is a four-wire system and the step up transformer planned to be installed at the Community Solar Project will provide effective grounding to the distribution network.



## 4.7 Screen 7

For interconnection of a Community Solar Project to a single-phase shared service line on the distribution system, the aggregated nameplate capacity on the shared secondary line must not exceed 20 kilowatts.

## **Result: Pass**

## 4.8 Screen 8

For interconnection of a single-phase Community Solar Project to the center tap neutral of a 240-volt service line, the addition of the Community Solar Project must not create a current imbalance between the two sides of the 240-volt service line of more than 20 percent of the nameplate rating of the service transformer.

## Result: N/A

## 4.9 Screen 9

Except as provided in Screen 12, the interconnection of the Community Solar Project must not require system upgrades or interconnection facilities different from or in addition to the applicant's proposed interconnection equipment.

## **Result: Fail**

The Public Utility anticipates that system upgrades will be required for this interconnection request and will require additional study to confirm.

## 4.10 Screen 10

The aggregated nameplate capacity, in combination with exiting transmission loads, must not cause the transmission system circuit directly connected to the distribution circuit where the Community Solar Project interconnection is proposed to exceed its design capacity.

## **Result: Pass**

## 4.11 Screen 11

If the public utility's distribution circuit uses high speed reclosing with less than two seconds of interruption, then the Community Solar Project must not be a synchronous machine. If the small generator facility is a synchronous machine, then the applicant must submit a Tier 4 application.

## **Result: Pass**

## 4.12 Screen 12

If the Community Solar Project fails to meet one or more of the criteria in Screens 1 - 11, but the Public Utility determines that the Community Solar Project could be interconnected safely if minor modifications to the transmission or distribution system were made (for example, changing meters, fuses, or relay settings), then the Public Utility



must offer the applicant a good-faith, non-binding estimate of the costs of such proposed minor modifications. Modifications are not considered minor under this subsection if the total cost of the modifications exceeds \$10,000. If the Applicant authorizes the Public Utility to proceed with the minor modifications and agrees to pay the entire cost of the modifications, then the Public Utility must approve the application under Tier 2.

#### **Result: Fail**

The Public Utility's system upgrades and interconnection facilities will exceed \$10,000.

#### 5.0 TIER 2 – NEXT STEPS

Because the Applicant's interconnection request has failed Screens 1, 3, 9 and 12 the Public Utility has determined that the Applicant's interconnection request cannot be safely interconnected without additional study and facilities construction, Applicant will be required to submit a new application under the Tier 4 of the Community Solar Procedures.

#### 6.0 PARTICIPATION BY AFFECTED SYSTEMS

No Affected Systems were identified in relation to this Interconnection Request.

#### 7.0 APPENDICES

Appendix 1: Higher Priority Requests Appendix 2: Informational Network Resource Interconnection Service Assessment



# **APPENDIX 1: HIGHER PRIORITY REQUESTS**

All active higher priority transmission service and/or generator interconnection and Community Solar Project requests will be considered in this review and are identified below. If any of these requests are withdrawn, the Public Utility reserves the right to restudy this request, as the results and conclusions contained within this review could significantly change.

Transmission/Generation Interconnection/Community Solar Queue Requests considered:

Q#	Size (MW)
650	10.000
651	10.000
652	10.000
653	10.000
1190	200.000
OCS005	0.36
OCS006	1.04
OSC009	1.625



## APPENDIX 2: INFORMATIONAL NETWORK RESOURCE INTERCONNECTION SERVICE ASSESSMENT

The study results described above reflect an energy resource interconnection service ("ERIS") evaluation, modified in the CSP program rules to examine only generation and load conditions local to the requested CSP project's interconnection point (sometimes referred to as the "zoomed in view"). The "zoomed in view" functions to: (1) study the project's proposed interconnection without considering certain existing or higher-queued requests outside of the local area; and (2) to inform whether the CSP facility must cap its project to mitigate, although not eliminate, the risk of potential deliverability-related network upgrades to accommodate the proposed CSP generator

By contrast, the following informational section provides a network resource interconnection service ("NRIS") evaluation performed with traditional assumptions, i.e., not modified to examine only local generation and load conditions, but rather one that assumes that all existing interconnections, higher-queued requests for interconnection service (in both the traditional and CSP queue), and generators with executed contracts beyond the local area are in-service. Depending on the severity of the conditions created when absorbing additional generator (capped or not capped) in that broader, "zoomed out" area, the local area-focused generator size cap developed in the "zoomed in" examination may not be sufficient to mitigate the need for deliverability-related network upgrades. Regardless of this report's informational NRIS results, the deliverability-related network upgrades ultimately necessary to accommodate the proposed CSP generator will depend on conditions present when the future transmission service study is performed, as well as whether network upgrade alternatives are available at that time.

The proposed point of interconnection is part of the Walla Walla transmission bubble, which currently has insufficient network load (at peak) to absorb any additional generation. Therefore, to deliver the aggregate of generation in the local system to the aggregate of load (the NRIS study scope), construction of a new 230 kV transmission line from the Walla Walla area system to the Yakima area system (where the generation could be absorbed) may be required, at a minimum. The new 230 kV line would interconnect Walla Walla substation with Wine Country substation in the vicinity of Grandview, Washington. The new 230 kV line would be approximately 90-100 miles, depending on the line route. Upgrades at both Walla Walla and Wine Country substations would be required to tie in the new line. The transmission provider's high level estimate for this transmission line is \$75,000,000.